

REMARKS

Obviousness Rejection

Claims 1, 4, 5, and 14 were rejected under 35 U.S.C. § 103(a) as being unpatentable over Rätzsch et al., WO 02/48261 ("Rätzsch") in view of Skoultchi et al., U.S. Patent No. 4,770,668 ("Skoultchi"). (Paper No. 20090611 at 2.) The Examiner used the published U.S. national stage application of the Rätzsch international application, US 2005/0020750 ("the '750 publication"), as an English translation. (*Id.*) We also refer to the '750 publication in citing to Rätzsch.

Rätzsch discloses a method for curing aminoplast resins in which inorganic particles, which have a laminated structure and which comprise interlamellary exchangeable cations of the following type: alkali cations, alkaline-earth cations, aluminum cations, iron cations and/or manganese cations, are used as curing agents. (Abstract, lines 1-6.) Rätzsch also discloses that "[t]he invention also relates to aminoplast resins cured in such a manner, to [provide] semi-finished products and ... molding materials." (Abstract, lines 6-8.)

Skoultchi discloses "adducts of cyclic ethylene urea which are useful as permanent press agents. These adducts include acid, polyacid ester, and multiester derivatives of cyclic ethylene urea and can be produced by the reaction of the cyclic ethylene urea with glyoxylic acid and glyoxylic acid derivatives, specifically ester acetals of glyoxylic acid. Such materials impart a high degree of permanent press properties to cellulose and cellulose/polymer blend fabrics." (Abstract.)

In making the rejection, the Examiner asserted with regard to claims 1 and 4 that "Ratzsch discloses aminoplast resins [0002]. Such resins include

polycondensates of melamine derivatives and C1-C10 aldehydes [0014]. Ratzsch uses the resins to make microcapsules [0012]. The process to make the microcapsules includes adding the precondensates into an aqueous dispersion of a 'core former', curing and then drying the microcapsules [0044]." (*Id.*)

The Examiner acknowledged, though, that "Ratzsch is silent . . . with regard to an aldehyde having an ester endgroup." (*Id.*)

The Examiner also asserted that "Skoultchi discloses condensation products of cyclic amines and aldehydes, or their derivatives, to form crosslinking resins without the use of toxic formaldehyde (col 1 ln 7-15; col 2 ln 12-54). The condensation products can be formed from glyoxylic acid hemiacetals, which exhibit reactive properties over a wide pH range (col 4 ln 57-68)." (*Id.*)

The Examiner concluded that "[a]t the time of the invention, it would have been obvious to one of ordinary skill in the art to use glyoxylic acid hemiacetals as the aldehyde of Ratzsch's invention because it was a known functional equivalent to Ratzsch's exemplary aldehydes while avoiding the use of toxic formaldehyde, yet providing reactivity over a wide pH range." (*Id.* at 2-3.)

Regarding claim 5, the Examiner asserted that "[t]he ratio of melamine derivative to aldehyde ranges from 1:1 to 1:6 [0014]," apparently with reference to Rätzsch. (*Id.* at 3.)

With regard to claim 14, the Examiner asserted that "Skoultchi teaches the ester is preferably a methyl- or ethyl-ester (col 5 ln 32-34)." (*Id.*)

In the "Response to Arguments" section, the Examiner asserted that "[r]egarding the process of encapsulation disclosed by Ratzsch, Applicant argues

Ratzsch does not disclose a solution of an amino compound (V) because the curing agent is a dispersion having a solids content (p17). The examiner respectfully disagrees with this assessment. The compound would still be in a solution, regardless of whether the curing agent is not fully soluble. Note the present claims recite inclusive language, i.e. "comprising," and therefore do [not] exclude the existence of the solids of the curing agent." (*Id.*)

The Examiner also contended that "Applicant further submits Ratzsch does not disclose a process wherein a core-material dispersion is formed in the solution containing the amino compound (V). The examiner notes claim 1 allows for steps (1) and (2) to occur in either order or simultaneously. Therefore, the "solution" does not necessarily have to contain the amino compound (V), so long as final solution does contain the amino compound (V): the solution in step (2) can merely contain the dispersion of core material before addition of the solution of step (1)." (*Id.*)

It is well settled the Examiner bears the burden to set forth a *prima facie* case of unpatentability. *In re Glaug*, 62 USPQ2d 1151, 1152 (Fed. Cir. 2002); *In re Oetiker*, 24 USPQ2d 1443, 1444 (Fed. Cir. 1992); and *In re Piasecki*, 223 USPQ 785, 788 (Fed. Cir. 1984). If the PTO fails to meet its burden, then the applicant is entitled to a patent. *In re Glaug*, 62 USPQ2d at 1152.

When patentability turns on the question of obviousness, as here, the search for and analysis of the prior art by the PTO should include evidence relevant to the finding of whether there is a teaching, motivation, or suggestion to select and modify the document(s) relied on by the Examiner as evidence of obviousness. *KSR Int'l Co. v. Teleflex Inc.*, 127 S.Ct. 1727, 1731-32 (2007) (the obviousness "***analysis should be***

made explicit and the teaching-suggestion-motivation test is “***a helpful insight***” for determining obviousness) (emphasis added); *McGinley v. Franklin Sports*, 60 USPQ2d 1001, 1008 (Fed. Cir. 2001). Moreover, the factual inquiry whether to modify document(s) must be thorough and searching. And, as is well settled, the teaching, motivation, or suggestion test “***must be based on objective evidence of record.***” *In re Lee*, 61 USPQ2d 1430, 1433 (Fed. Cir. 2002) (emphasis added). See also *Examination Guidelines for Determining Obviousness*, 72 Fed. Reg. 57526, 57528 (October 10, 2007) (“The key to supporting any rejection under 35 USC § 103 is the clear articulation of the reason(s) why the claimed invention would have been obvious.”).

Respectfully, we submit that the rejection is devoid of a proper § 103 analysis in support of the proposed modification. All that is there are conclusory statements such as the assertion that “[i]t would have been obvious to one of ordinary skill in the art to use glyoxylic acid hemiacetals as the aldehyde of Ratsch’s invention because it was a known functional equivalent to Ratsch’s exemplary aldehydes while avoiding the use of toxic formaldehyde, yet providing reactivity over a wide pH range.” (Paper No. 20090611 at 2-3.)

Here, what the rejection should have done, but did not, was to explain on the record ***why*** one skilled in this art would modify the disclosure of Rätzsch and Skoultchi in the manner implied by the Examiner, to arrive at the process for forming capsules of amended claim 1. As is well settled, an Examiner cannot establish obviousness by locating documents which describe various aspects of a patent applicant’s invention without also providing evidence of the motivating force which would

impel one skilled in the art to do what the patent applicant has done. *Takeda Chem. Indus., Ltd v. Alphapharm Pty., Ltd.*, 492 F.3d 1350, 1357 (Fed. Cir. June 28, 2007) (citing *KSR*) (indicating that "it remains necessary to identify ***some reason*** that would have led a chemist to modify a known compound in a particular manner to establish prima facie obviousness of a new claimed compound") (emphasis added); *Ex parte Levengood*, 28 USPQ2d 1300, 1301-02 (BPAI 1993). But this is precisely what the Examiner has done here. Thus, the rejection is legally deficient and should be withdrawn for this reason alone.

Beyond looking at the cited documents to determine if any of them suggests doing what the inventors have done, one must also consider if the art provides the required expectation of succeeding in that endeavor. See *In re Dow Chem. Co. v. American Cyanamid Co.*, 5 USPQ2d 1529, 1531 (Fed. Cir. 1988). "Obviousness does not require absolute predictability, but a reasonable expectation of success is necessary." *In re Clinton*, 188 USPQ 365, 367 (CCPA 1976). Furthermore, the U.S. Patent and Trademark Office Examination Guidelines at page 57527 provide the following guidance to Examiners: "In short, the focus when making a determination of obviousness should be on what a person of ordinary skill in the pertinent art would have known at the time of the invention, and on what such a person would have reasonably expected to have been able to do in view of that knowledge". However, no such motivation or expectation of success can be found in the cited documents.

Arguments presented on the record previously regarding each of Rätzsch and Skoultchi are incorporated here.

Rätzsch does not disclose, suggest, or provide motivation for the claimed process for forming capsules comprising the recited steps including step (3), "depositing the amino compound as a resin upon the surface of the core material to form capsules." As noted on the record, Rätzsch discloses that "[i]t has been surprisingly found that aminoplasts having high toughness and strength can be prepared by using curing agents comprising inorganic particles having a layer structure which have an interlamellar content of exchangeable cations." (Paragraph 9) (emphasis added.) With regard to the process of making "semifinished products and moldings", Rätzsch discloses methods using "mixtures of aminoplast precondensates and, as a curing agent, from 1 to 30% by mass, based on the aminoplast precondensates, of inorganic particles having a layer structure which have an interlamellar content of exchangeable cations ... in the form of aqueous dispersions or emulsions having a solids content of from 30 to 80% by mass, which may optionally contain up to 50% by mass of C₁-C₈-alcohols, from 0.1 to 5% by mass of polymeric dispersants and from 0.01 to 3% by mass detergents..." (Id. at Paragraph 41) (emphasis added). It is this material, according to the disclosure of Rätzsch, that is "processed by introduction into an emulsifier-free aqueous dispersion of solid or liquid capsule core formers, curing and spray-drying to give microcapsules..." (Paragraphs 44 and 41.)

The Examiner's assertion that Rätzsch "uses the resins to make microcapsules" (Paper No. 20090611 at 2), is erroneous or misleading at best. The examples of Rätzsch disclose impregnating cellulose (Example 1) or textile shreds (Example 2) with the disclosed aminoplast solution with sodium montmorillonite or aluminum montmorillonite, respectively. Cut-out test bars were tested for tensile

strength, flexural modulus of elasticity and impact strength. Rätzsch also discloses production of laminates (Example 3) in which décor paper and kraft paper are impregnated with the aminoplast precondensate solution including sodium montmorillonite. Deformability of the resulting laminate of Example 3 was investigated and Rätzsch discloses that “no cracking of the laminate occurred.” As the examples evidence, Rätzsch is primarily concerned with preparing products with improved toughness. Rätzsch provides no examples of the preparation of microcapsules.

Where Rätzsch mentions a process for making microcapsules, Rätzsch discloses that “[t]he production of microcapsules is effected by introduction of the aminoplast precondensates into an emulsifier-free aqueous dispersion of solid or liquid capsule core formers and inorganic particles having a layer structure, which have an interlamellar content of exchangeable cations ..., as a curing agent, **and subsequent curing and spray-drying.**” (Paragraph 60, lines 1-8) (emphasis added.) Rätzsch’s disclosure of making microcapsules using the aminoplast precondensates including the required inorganic particles having a layer structure indicates that the formation of the capsules occurs by curing.

Based upon the disclosure of Rätzsch, one skilled in the art would not expect success in the claimed process which includes the step of “depositing amino compound (V) as a resin upon the surface of the core material to form capsules.” One skilled in the art would understand, rather, that formation of capsules in the process disclosed by Rätzsch would occur upon curing. The inclusion of the inorganic particles having a layer structure with the aminoplast precondensate and the core former material

in accordance with Rätzsch's disclosure of microcapsule formation would be understood by one of skill in the art to inhibit capsule formation until curing.

Thus, Rätzsch also leads one skilled in the art away from the claimed process. As is well settled, doing what an asserted document teaches against is the antithesis of obviousness. See, *In re Buehler*, 515 F.2d 1134 (CCPA 1975) and *In re Rosenberger*, 386 F.2d 1015 (CCPA 1967). For this reason alone, the rejection should be withdrawn.

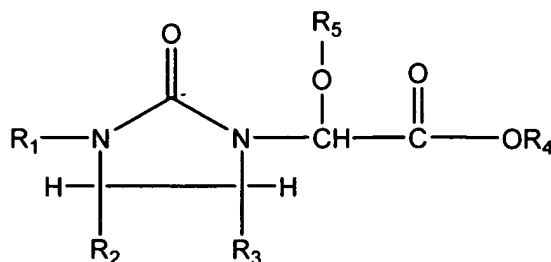
Also, Rätzsch fails to disclose, suggest or provide motivation for the claimed process which recites "(1) forming a solution of an amino compound (V) from a mixture of an amino compound and an alkanol hemiacetal in a solvent" and "(2) forming a dispersion of a core material in the solution." As noted, Rätzsch discloses a process using "aminoplast precondensates and ... from 1 to 30% by mass, based on the aminoplast precondensates, of inorganic particles having a layer structure ... in the form of aqueous dispersions or emulsions having a solids content of from 30 to 80% by mass..." (Paragraph 41), which "are processed by introduction into an emulsifier-free aqueous dispersion of solid or liquid capsule core formers, curing and spray drying to give microcapsules." (Paragraph 44.) According to Rätzsch, the dispersion includes **both** the core forming material as well as Rätzsch's solids content which includes the required inorganic particles having a layer structure. Regardless of whether step 1 or 2 is carried out first or if they are carried out simultaneously in the process as claimed, Rätzsch's required presence of inorganic particles having a layer structure (solids content) in addition to the core forming material and the aminoplast precondensates fails to suggest or provide motivation for the claimed process.

Furthermore, Rätzsch provides no teaching, suggestion, or motivation to use an aldehyde having an ester end group to achieve a process for forming capsules comprising, *inter alia*, forming a solution of an amino compound (V) from a mixture of an amino compound and an alkanol hemiacetal in a solvent, wherein amino compound (V) has an ester end group, COOR₄. Rätzsch discloses that “[p]referred melamine resins are polycondensates of melamine derivatives and C₁-C₁₀-aldehydes ... and the partial etherification products thereof with C₁-C₁₀-alcohols...”. (Paragraph 14, lines 1-5.) The Examiner acknowledged that “Rätzsch is silent ... with regard to an aldehyde having an acid or ester endgroup (e.g. glyoxylic acid).” (Id. at 3) (emphasis added.)

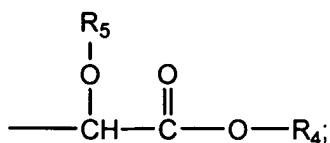
Moreover, one skilled in the art would know that an aldehyde having an ester end group as in the claimed process is not as stable in a water soluble system as would be other aldehydes. Rätzsch provides no expectation of success to one skilled in the art to use amino compound (V) as a starting material in the claimed process. More fundamentally, one skilled in the art would simply not consider Rätzsch in making the claimed process.

One skilled in the art simply would not have been led to the simple and elegant process in accordance with the present claims using amino compound (V), in view of the high-strength aminoplast curing process of Rätzsch.

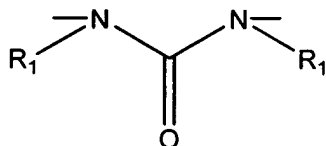
It is submitted that Skoultchi does not fill the many deficiencies of Rätzsch. It is also submitted that Skoultchi is far removed from the claimed invention. Skoultchi discloses “adducts of cyclic ethylene urea which are useful as permanent press agents”, as shown below:



where R₁ is alkyl or



R₂ and R₃ are OH, H, or combine to form



and the N atoms attach to the molecule at positions R₂ and R₃; and R₄ and R₅ are alkyl, hydroxyalkyl, or H...; and R₄ and R₅ are alkyl, hydroxyalkyl, or H. (Col. 2, lines 12 – 38; see also claim 1.)

Thus, at the position corresponding to substituent X in amino compound (V) of the claimed process, Skoultchi discloses only oxygen. The adducts of cyclic ethylene urea of Skoultchi do not disclose or suggest the use of the compounds of the claimed process of forming capsules, i.e., Skoultchi does not disclose or suggest using amino compound (V) as claimed, which has X as NR₅.

In addition to this difference at substituent X, Skoultchi provides various options for the groups at other positions in the disclosed genus of adducts of cyclic ethylene urea. Some of these options differ from those in amino compound (V). Some

of these groups overlap. When these groups overlap, nowhere does Skoutchi suggest or provide motivation to choose from among the groups listed as options at each of those positions to arrive at the substituents of claimed amino compound (V). For example, Skoutchi discloses that R_4 is alkyl, hydroxyalkyl, or H. R_4 of amino compound (V) of the claimed process is recited as a C_1 - C_{12} alkyl group, aryl group, aralkyl group or cycloalkyl group. Skoutchi provides no suggestion to use alkyl as R_4 (in combination with other substituent choices and substitution of the urea oxygen with NR_5 that would lead to amino group (V)), and provides no disclosure of the other presently claimed options at R_4 .

Furthermore, Skoutchi relates to use of compounds for permanent press of fabrics. Skoutchi's disclosure "relates to a series of materials which are reactive with cellulose type hydroxyl groups to impart crosslinking and, therefore, permanent press properties to cellulose and cellulose blend fabrics." (Col. 1, lines 7-12.) The Examiner has acknowledged in a prior Action that Skoutchi is "silent with regards to using their invention toward coatings." (Paper No. 20070716 dated August 7, 2007, paragraph 37.) The Examiner has provided no basis for one to consider the "permanent press compounds" of Skoutchi, which differ from the compounds of the claimed process, and which are for use in a different field, permanent press of fabrics, for a different purpose, to cross-link cellulosic material, as a suitable substitute for film-forming resins. There is no teaching, suggestion, or motivation at all in Skoutchi concerning microencapsulating a dispersed material.

In addition, one skilled in the art would know that the process disclosed by Skoutchi of using the disclosed urea compounds as permanent press agents could not

be used or extrapolated to prepare capsules in accordance with the claimed process.

Skoultchi discloses:

The compounds are preferentially applied to the fabrics to be treated as compositions comprising a 0.1-10% (by weight) aqueous solution, preferably as an 8% solution. The solution may also contain ethanol to aid in the dissolution of the composition and, if desired, a curing agent (such as citric acid or magnesium chloride which promote crosslinking) at a low concentration, preferably 0.05-0.5%, by weight, most preferably 0.175%.

In a typical procedure, the fabric is soaked in the solution until it is saturated with liquid. The fabric is then lightly wrung or squeezed between pinch rollers, leaving a 50-90% wet pick up weight gain, and subsequently **dried in a hot press at a temperature in excess of 100° C., preferably 150° C.,** for several minutes (preferably less than 5). **The crosslinking of the fibers and curing is then accomplished by heating the fabric to a higher temperature, preferably 170° C. for 1-5 minutes.** Optionally, the press drying can be preceded by an oven-drying step at a lower temperature, preferably 105° C., to partially dry the fabric and reduce the time that it must remain in the press; typically this procedure is used to remove a large portion (ordinarily 75-90%) of the water after which the press drying and subsequent curing is accomplished.

Once the crosslinking (curing) is accomplished, the resultant fabric will possess durable permanent press and self-smoothing properties and is suitable for use in the manufacture of wearing apparel and other textile commodities[.] (Col. 5, line 63 to Col. 6, line 24) (emphasis added.)

Also, in the Examples section, Skoultchi discloses heating to remove water and continuing the reaction "until the water removal was complete and a product in the form of a viscous oil was obtained." (Col. 6, lines 35-44.) Skoultchi thus discloses heating to removal of water to cure.

Whereas Skoultchi removes water in order for the urea compounds to cross-link with the fabric, one skilled in the art would understand that in the claimed process, removal of the aqueous phase would be detrimental to the formation of capsules. At best (for the Examiner's case), Skoultchi simply would not be considered in connection with the claimed process. At worst, the process of Skoultchi leads one skilled in the art away from the claimed process.

The Court of Appeals for the Federal Circuit has reaffirmed that "hindsight claims of obviousness" are improper. In distinguishing between fact patterns where a combination of known elements may or may not be proper, the Federal Circuit clearly articulated that simply varying all possible parameters until the claimed invention is arrived at in the absence of either an indication of which parameters to vary or an indication of which of many possible choices is likely to be successful is impermissible hindsight reconstruction. Indeed, the Federal Circuit concluded:

Similarly, patents are not barred just because it was obvious "to explore a new technology or general approach that seemed to be a promising field of experimentation, where the prior art gave only general guidance as to the particular form of the claimed invention or how to achieve it." *Procter & Gamble Co. v. Teva Pharmaceuticals USA, Inc.*, 2009 WL 1313321 at *5 (Fed. Cir. May 13, 2009), citing *In re O'Farrell*, 853 F.2d at 903.

Clearly, the Examiner's rejection is based on impermissible hindsight reconstruction and is improper. Accordingly, it is respectfully submitted that the rejection has been rendered moot. Reconsideration and withdrawal of the rejection are requested.

The combination of Rätzsch and Skoultchi is improper. Moreover, any such combination can not lead to the present claims. Even if the combination of

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Rätzsch and Skoultchi were proper, which Applicants submit that it is not, the rejection has been overcome.

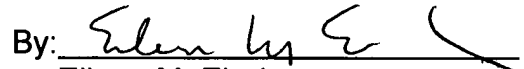
In view of all of the foregoing, the rejection has been rendered moot. Reconsideration and withdrawal are respectfully requested.

In view of all of the foregoing, entry of the amendments and withdrawal of all outstanding objections and rejections is respectfully requested. It is submitted that the application is in condition for allowance. Issuance of a Notice of Allowance is respectfully requested.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as first class mail in an envelope addressed to: Mail Stop Amendment, Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450, on September 23, 2008.


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